DE-24-087 DOE witness contradicts Eversource testimony.

DOE witness DeVergilio provides no evidence for his statements. He also contradicts statements made by Eversource:

DOE witness DeVergilio:

“Additionally, the existing structures will not support the additional weight associated with the larger conductor size under severe weather conditions as specified in NESC 250B.”

Eversource witness Soderman:

“Q Does the change from -- is the change from wood poles to steel poles in part necessitated by a change in weight of the wires?

A (Soderman) No.” (p. 30) 2025-1-24 SEC hearing (X-178 design is the same as the U-199 design)

DOE witness DeVergilio:

Q. Based on your review, do you believe it is reasonably necessary for Eversource to replace the 5 existing poles with higher structures?

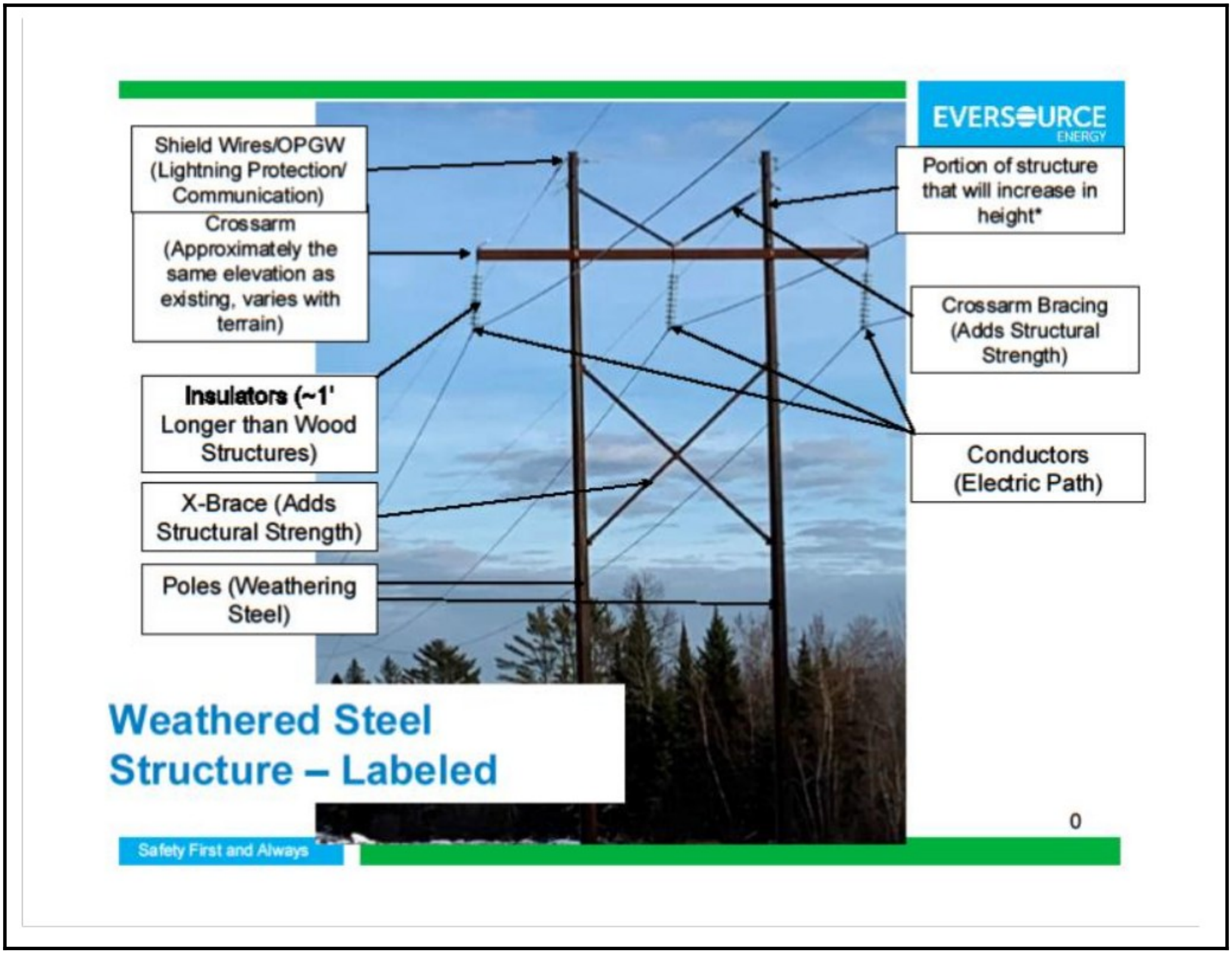
“A. Yes. According to the Company, the current structures will not provide sufficient vertical clearance associated with the increase of conductor size from 795 ACSR to 1272 ACSS. This vertical clearance is dictated by National Electric Safety Code (NESC) standards and internal Eversource clearance standards.2

Eversource witness Soderman

“Q Does the increase in height -- or is the increase in height necessitated in any way by the change from – the change in form of conductor wire and the change in form of shield wire?

A (Soderman) Certainly not the shield wire. The conductor has, I would say, for the span of length that we're talking about, very similar set of characteristics, even at its max sag condition. So I would expect it to -- I would expect it to -- you know, 500-foot span length to not really have a material effect.” (pgs 29-30) 2025-1-24 SEC hearing

Eversource produced a diagram which shows the structure height increases occurring only above the cross-bar and insulators, and elsewhere claims that the OPGW requires a 15’ clearance from the conductors (compared to 10’ required by the existing shield wire.) The diagram does not show structure heights increasing below the cross-bar and insulators, due to greater sag of the 1272 conductor:



DOE witness DeVergilio:

“If the existing conductor size is not replaced, the U199 normal summer capacity rating will be reduced by 44% on the rest of the upgraded line. “

Eversource lawyer Bellis:

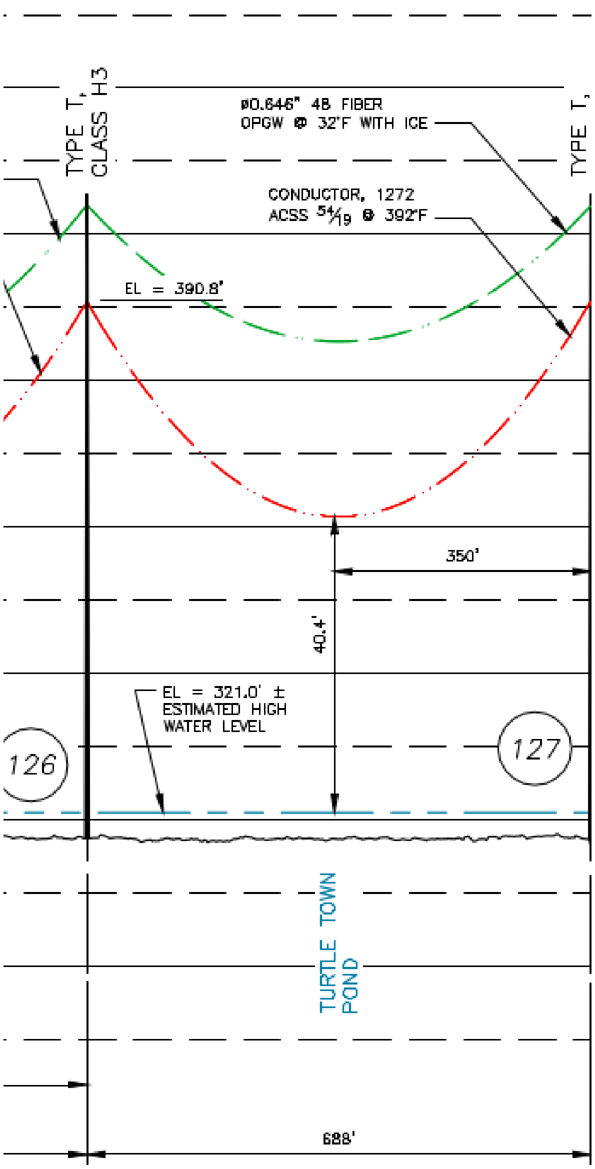
“MR. BELLIS: Yeah. Marvin Bellis with Eversource.

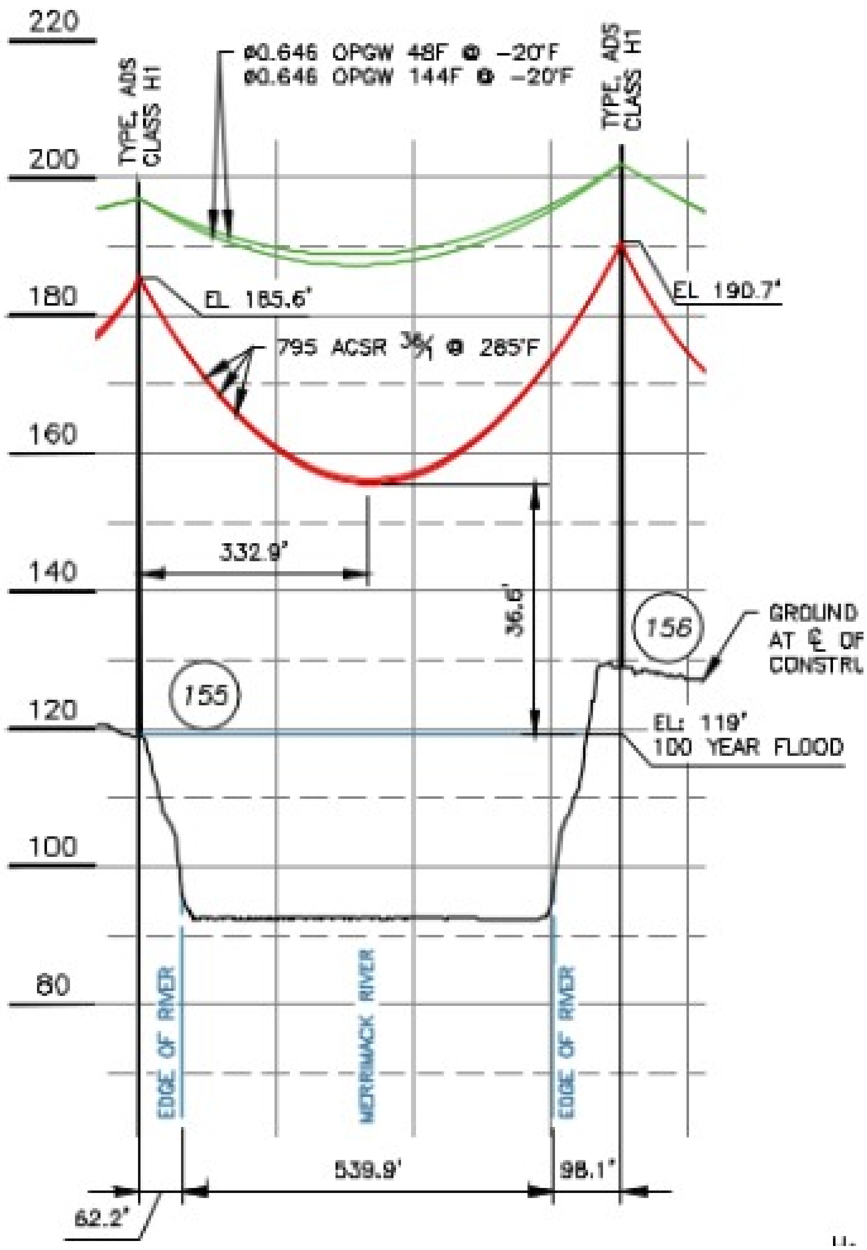
The way this [X-178] line upgrade -- or not upgrade, but rebuild --works is you have a different kind of conductor that has, in theory, by itself, a higher capacity than the conductor that is in place today. But in order for any increased capacity, there would have to be other system upgrades at the substations, which are not being currently considered.” 2025-1-24 SEC hearing

The U-199 taps into the X-178 so unless the X-178 was rebuilt with more than doubled capacity, (as Eversource plans) and unless the Woodstock substation and Streeter Pond tap are upgraded to allow this extra capacity to flow to the Z-180 and U-199, which Eversource claims it is not considering, then the U-199 appears to be limited by the X-178 capacity.

Below, 1272 ACSS
28’ sag @ 688’ span

Below, 795 ASCR
28’ sag @ 700’





Q And then the next line, "The line would then be limited to 254 MVA LTE due to substation equipment, which would be addressed as part of a future project". So would -- would there be some additional transmission capacity with the ACSS but for a lack of upgrading to the substation equipment?

A (Soderman) Yes, but the ability to realize some of that, particularly considering the long length of this transmission line, might require more than just upgrades to the existing equipment. It may require additional equipment to be installed in the transmission circuit to support voltage for such a large power draw over such a long distance.

(above: SEC X-178 testimony.)

Witness DeVergilio did not address the alternative of doing nothing; using the remaining years of service the existing U-199 had. The U-199 was built in 1969-70. The recently replaced O-154, D-142 and W-157 were built in 1946-7, 1948 and 1948 (and no structure ratings were provided for these projects so they may have had years of service remaining.)

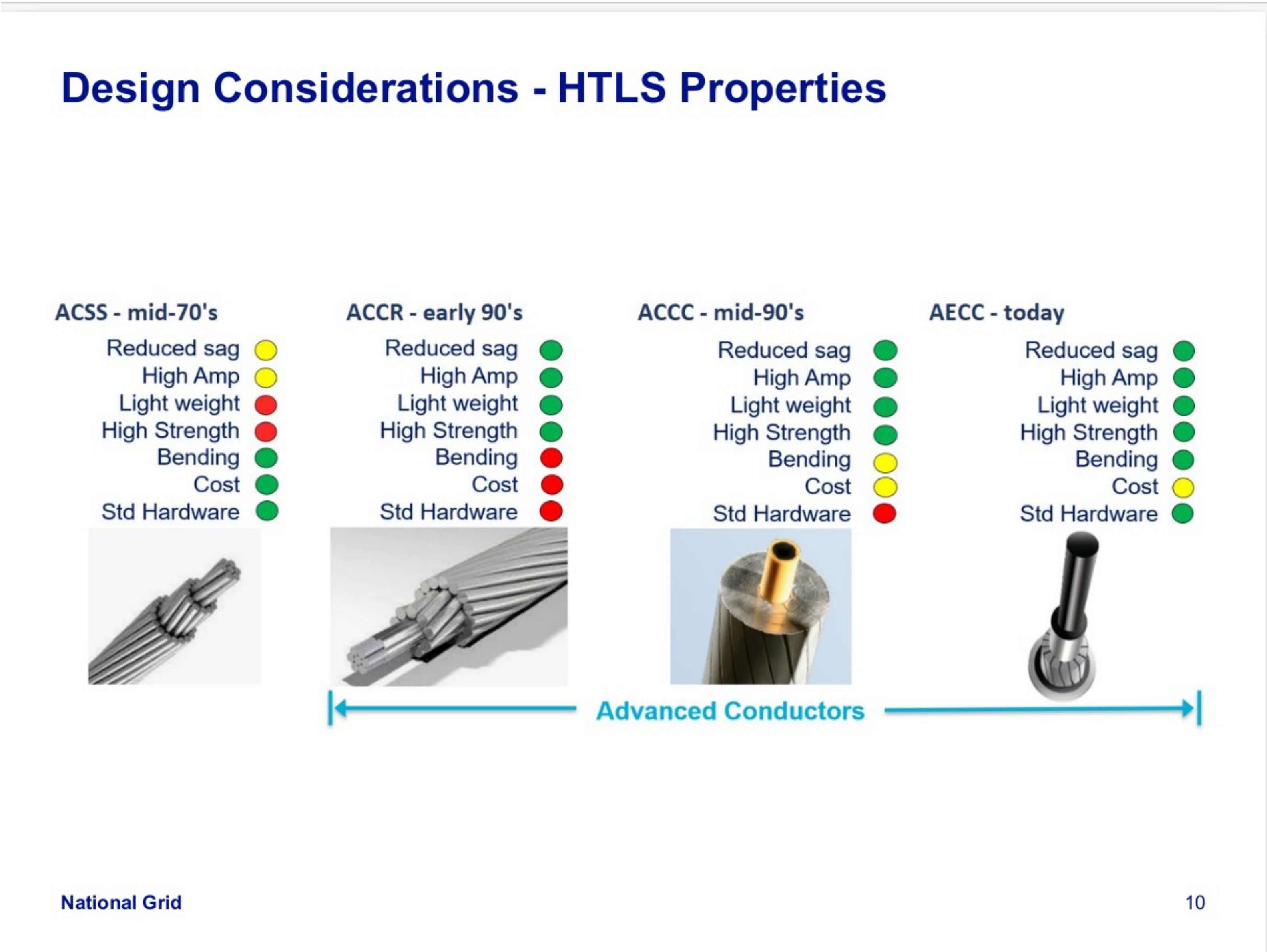
Witness DeVergilio did not provide inspection reports showing need for structure replacements.

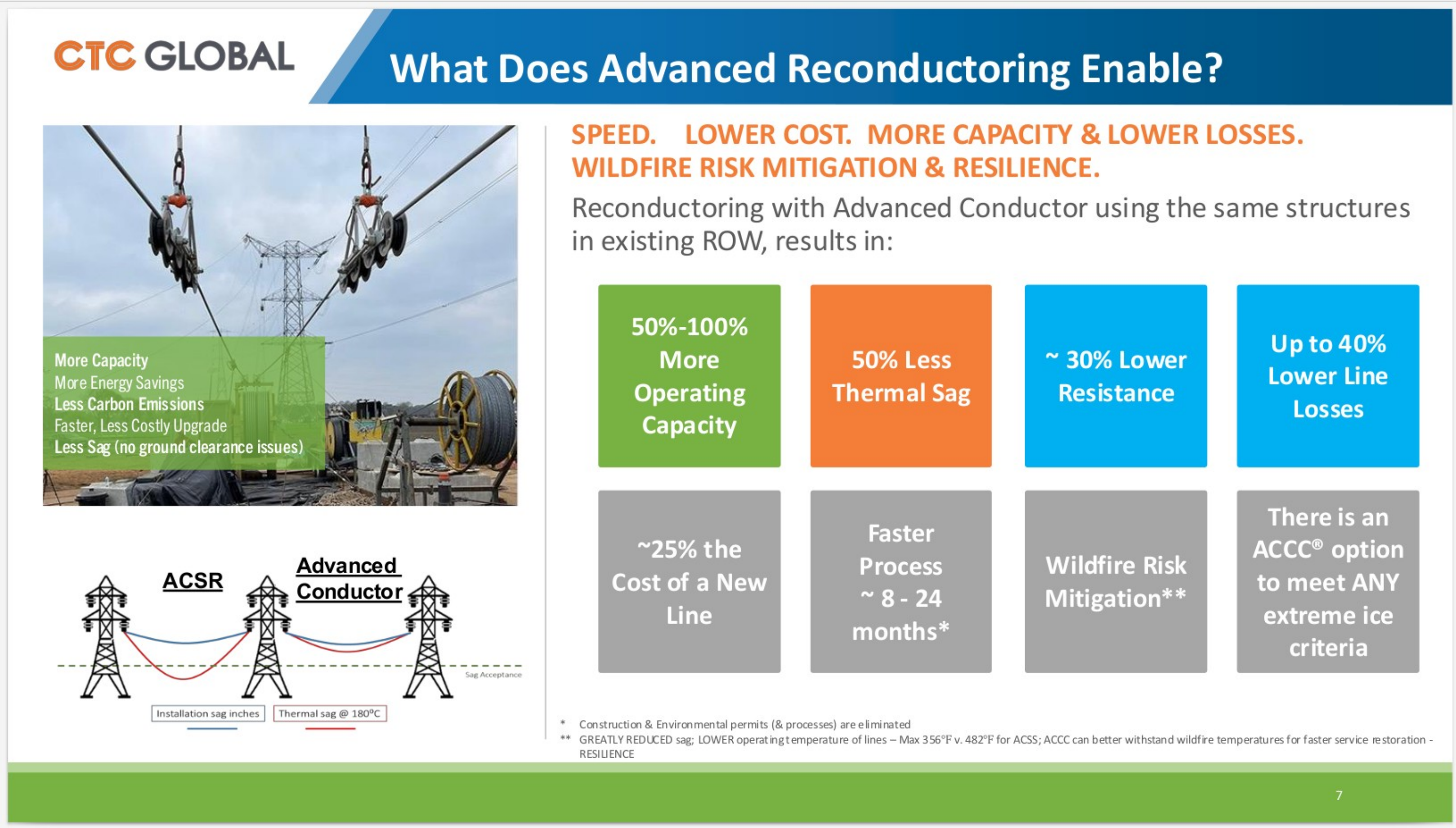
Witness DeVergilio did not address the fact that doubling the capacity of the U-199 (from 1,094 to 2,200 max amps.) violates FERC's definition of an Asset Condition project, which can only increase capacity incrementally, and that this project warrants a complaint to FERC.

Witness DeVergilio did not address the use of GETS or advanced conductors as an alternative to a rebuild (which would still violate FERC's definition of an Asset Condition project). Eversource's standard rebuild conductor, (1272) ACSS was introduced in the 1970s and has been superceded by several generations of advanced conductors, as shown in a June 18, 2025 meeting of ISO and the PAC where these were presented and discussed.

https://www.iso-ne.com/committees/planning/planning-advisory

June 2018 ISO GETS meeting; pages from CTC Global and National Grid presentations:





Eversource presented a document in which it attempted to justify its use of ACSS, but compared the sag of 1272, (2,200 amps) ACSS to an ACCC conductor which may not be the extreme ice conductor and to TS Max Core about which I can find nothing. TS Conductor AECC/TW with 1.382" diameter has a max. amperage of more than 2,500 amps. It doesn't show the distance over which this max. sag occurs. It may be that max. sag of TS conductor over longer distances is less, so structures numbers could be reduced. It used Rule 250B:

Sag & Tension Comparison		ACSS	ACCC		ACCR	TS Conductor
		EHS Steel	ULS	ULS AZR		Max Core
Conductor Size	kcmil	1272	1582	1582	1272	1619
Diameter	inch	1.382	1.345	1.345	1.35	1.382
Weight	#/foot	1.631	1.5629	1.5661	1.326	1.63238
Weather Case	Cable Condition					
Rule 250B	Max Sag	14.46	14.05	14.06	13.05	14.47
Uplift	Initial	9.32	8.08	9.61	8.85	9.69
200°C	Max Sag	20.03	14.08	19.23	24.77	13.94
120 MPH Wind	Max Sag	17.20	16.81	16.83	15.88	17.00
NH Ice (1.5")	Max Sag	19.53	19.66	18.91	17.73	19.06
Maximum Difference		**10.71**	**11.58**	**9.62**	**15.92**	**9.37**
Summer LTE Rating	Amps	2906	3172	3118	2976	3231

“The NESC does not require the designs for structures less than 60 feet in height to consider either the Rule 250 C Extreme Wind or the Rule 250D Extreme Ice and Concurrent Wind loads.”

https://woodpoles.org/wp-content/uploads/TB_Overload_Poles.pdf

With its unnecessary structure height increases, E$ is changing the maximum sag data. What would it be without Rule 250 D ? (which is the one E$ uses in other documents.)

Eversource states: (
Exhibit 11 - X-178 Line Design and Conductor Selection)

“The primary driver of the height increase is Rule 250D of the National Electrical Safety Code. Rule 250D was introduced in 2007 and currently requires that transmission lines in this area of New Hampshire be designed to withstand 1-inch of radial ice with 40 mile-per-hour winds.” (p 61)

“The National Electric Safety Codes (NESC) provides three weather loading requirements to help safeguard poles from the effects of weather. Of the three, the load that has the most significant effect on the pole rules the design.

The weather loading rules are:

NESC Rule 250B: General Ice and Wind

Heavy, medium, or light load analysis is needed based on the location

NESC Rule 250C: Extreme Wind

Such as those that come with extreme summer storms

- Required for poles 60+ feet above ground to withstand winds up to 150 mph
- Commonly used on poles less than 60 feet for hardening feeders to improve system resiliency, restoration times, and reliability indices (i.e. SAIDI, SAIFI, CAIDI)

NESC Rule 250D: Extreme Ice with Concurrent Wind

Such as those that come with extreme winter storms

- Provides geographic ice and wind loadings based on historical meteorological data
- Ice loads can reach 1.50 inches with wind speeds up to 60 mph”

https://ikegps.com/ikewire/nesc-weather-loadings/

Table 1-1 (Imperial U.S.)

Shaped Wire Concentric-Lay-Stranded Compact Aluminum Conductor
Aluminum Encapsulated Carbon Core (AECC/TW)

Resistance				GMR (ft)	Reactance @ 1 ft Spacing 60 Hz		Ampacity				Spec ID	Code Word
DC @ 20°C Ω/mile	AC-60 Hz @ 25°C Ω/mile	AC-60 Hz @ 180°C Ω/mile	AC-60 Hz @ 200°C Ω/mile		Inductive Xa Ω/mile	Capacitive X'a MΩ-mile	@ 75°C amp	@ 100°C amp	@ 180°C amp	@ 200°C amp		
0.05521	0.05954	0.09293	0.09724	0.04664	0.37194	0.08476	1350	1678	2374	2511	29575	Bersfort/TW
0.05348	0.05835	0.09040	0.09454	0.04617	0.37317	0.08467	1367	1700	2409	2549	29734	Lucania/TW
0.05388	0.05862	0.09095	0.09513	0.04632	0.37279	0.08467	1364	1696	2402	2541	29735	SaintElias/TW
0.05433	0.05894	0.09165	0.09587	0.04646	0.37242	0.08467	1359	1690	2393	2531	29736	Peak/TW
0.05482	0.05929	0.09237	0.09664	0.04661	0.37202	0.08467	1355	1684	2384	2521	29737	Turtle/TW
0.05534	0.05968	0.09313	0.09745	0.04677	0.37161	0.08467	1350	1678	2374	2510	29738	Loon/TW

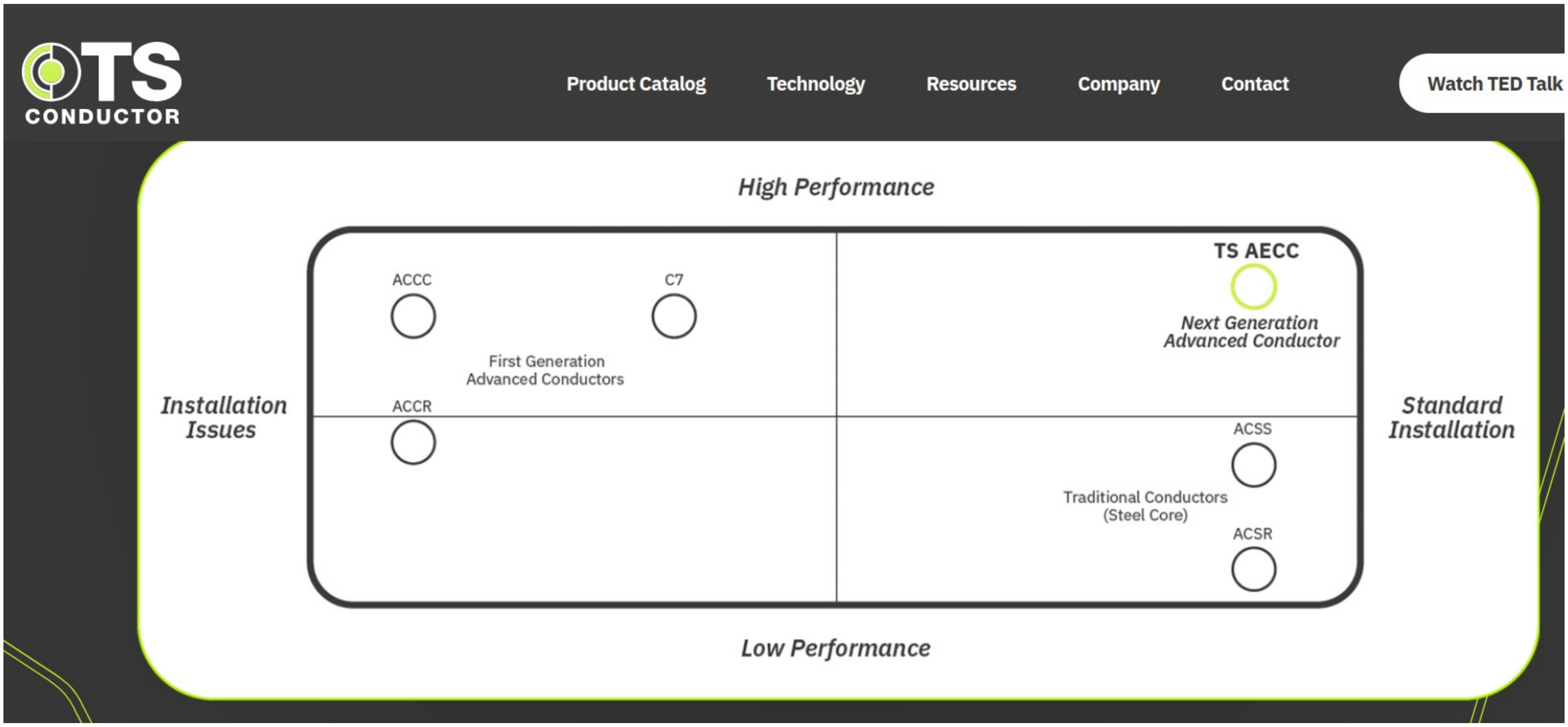
Table 1-1 (Imperial U.S.)

Shaped Wire Concentric-Lay-Stranded Compact Aluminum Conductor
Aluminum Encapsulated Carbon Core (AECC/TW)

Code Word	Conductor Size (kcmil)	Comparable Substitution ACSR Conductor		Diameter		Unit Weight (lbs/ft)	RBS (lbs)
		Code Word	Ice Thickness (in)	Core (mm)	Total (in)		
Bersfort/TW	1608	Pheasant	1.50	11.5	1.378	1.63165	75090
Lucania/TW	1662	Pheasant	0.50	9.5	1.382	1.64367	54950
SaintElias/TW	1649	Pheasant	0.75	10.0	1.382	1.64108	59640
Peak/TW	1635	Pheasant	1.00	10.5	1.382	1.63648	64540
Turtle/TW	1620	Pheasant	1.25	11.0	1.382	1.63189	69680
Loon/TW	1604	Pheasant	1.50	11.5	1.382	1.62765	75070

The 2,200 amp AECC/TW Bigelow has a diameter of 1.293 and weight of 1.436 per 1,000 but was not used by Eversource for comparison as an equivalent conductor. Would a larger conductor be subject to more sag from ice loading, at any NESC standard?

TS Conductor site lists ACSS and ACCR as low-performance conductors:



https://tsconductor.com/product-information/

kris pastoriza June, 2025